CLAIMS

1. An energized fusion protein Fv-LDP-AE consisting of a fusion protein Fv-LDP that contains the single-chain Fv fragment (scFv) of monoclonal antibody against type IV collagenase, the apoprotein of lidamycin (LDP), the flexible spacer GGGGS between scFv and LDP, and a C-terminal His_6-tag; and an active enediyne chromophore (AE) that derives from lidamycin.

2. The energized fusion protein Fv-LDP-AE of claim 1, wherein the gene sequence coding for said Fv-LDP is set forth in SEQ ID NO: 1, the amino acid sequence of said Fv-LDP is set forth in SEQ ID No: 2.

3. A method for producing Fv-LDP-AE of claim 1, comprising:
   a. Preparing the fusion protein Fv-LDP;
   b. Executing molecular reconstitution by mixing AE that derives from LDM containing high percentage of AE with said fusion protein Fv-LDP.

4. The method of claim 3, wherein said Fv-LDP in 0.01 M PBS (pH 7.0) solution is mixed with AE in methanol solution by a molecular ratio of 1:5 and a volume ratio of 1:50, reacting at room temperature for 12 h, and the energized fusion protein Fv-LDP-AE is obtained.

5. The method of claim 3, wherein said LDM has high percentage of AE which is at least 80%, and preferably 90% of its whole chromophores.

6. Use of energized fusion protein Fv-LDP-AE of claim 1 in preparation of anti-angiogenic and novel antibody-based, tumor- targeting medicament.

7. The use of claim 6, wherein said tumor is selected from the group consisting of solid tumors such as colon carcinoma, rectum carcinoma, esophageal carcinoma, gastric carcinoma, and hepato-carcinoma; breast carcinoma; ovarian carcinoma; lung carcinoma and renal carcinoma.

8. A pharmaceutical composition comprising therapeutically effective amount of energized fusion protein of claim 1, and optionally, pharmaceutical acceptable carrier and/or excipient.

9. A method for treating tumors in human comprising administering therapeutically effective amount of energized fusion protein of claim 1 or said pharmaceutical composition of claim 8 to a patient with tumor.